

Dairy Development in India and Andhra Pradesh: An Overview

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ABSTRACT-India has been the leading producer and consumer of dairy products worldwide since 1998 with a sustained growth in the availability of milk and milk products. Dairy activities form an essential part of the rural Indian economy, serving as an important source of employment and income. India also has the largest bovine population in the world. However, the milk production per animal is significantly low as compared to the other major dairy producers. Moreover, nearly all of the dairy produce in India is consumed domestically, with the majority of it being sold as fluid milk. On account of this, the Indian dairy industry holds tremendous potential for value-addition and overall development. The dairy industry in India is the largest globally, accounting for 23 percent of global milk production. The industry contributes 5 percent to the national economy and directly supports more than 8 crore farmers. India's dairy industry has grown significantly over the past 10 years, supported by various initiatives taken by the government. The nation's milk production increased at a CAGR of 6.2 percent from 146.31 million tonnes (MT) in 2014-15 to 209.96 MT in 2020-21. This paper an attempt to the dairy development in India and Andhra Pradesh.

Keywords: Dairy industry in India and Andhra Pradesh, milk production in India and Andhra Pradesh, Rashtriya Gokul Mission, National Programme for Dairy Development (NPDD) and exports of dairy products.

INTRODUCTION

India has been the leading producer and consumer of dairy products worldwide since 1998 with a sustained growth in the availability of milk and milk products. Dairy activities form an essential part of the rural Indian economy, serving as an important source of employment and income. India also has the largest bovine population in the world. However, the milk production per animal is significantly low as compared

to the other major dairy producers. Moreover, nearly all of the dairy produce in India is consumed domestically, with the majority of it being sold as fluid milk. On account of this, the Indian dairy industry holds tremendous potential for value-addition and overall development.

Along with offering profitable business opportunities, the dairy industry in India serves as a tool of socio-economic development. Keeping this in view, the Government of India has introduced various schemes and initiatives aimed at the development of the dairy sector in the country. For instance, the "National Dairy Programme (Phase-I)" aims to improve cattle productivity and increase the production of milk expanding and strengthening and expanding the rural milk procurement infrastructure and provide greater market access to the farmers. On the other hand, the private participation in the Indian dairy sector has also increased over the past few years. Both national and international players are entering the dairy industry, attracted by the size and potential of the Indian market. The focus is being given to value-added products such as cheese, yogurt, probiotic drinks, etc. They are also introducing innovative products keeping in mind the specific requirements of the Indian consumers. These players are also improving their milk procurement network which is further facilitating the development of the dairy industry in India.

The dairy industry in India is the largest globally, accounting for 23 percent of global milk production. The industry contributes 5 percent to the national economy and directly supports more than 8 crore farmers. India's dairy industry has grown significantly over the past 10 years, supported by various initiatives taken by the government. The nation's milk production increased at a CAGR of 6.2 percent from 146.31

million tonnes (MT) in 2014-15 to 209.96 MT in 2020-21.

The major production area of dairy products in India is Uttar Pradesh, Maharashtra, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan and Tamil Nadu. Competition in the Indian dairy industry has always been robust. Amul, Mother Dairy, Orissa State Cooperative Milk Producers Federation, Dudhsagar Dairy, Aavin, and Kwality Limited are some of the major players in the dairy industry in India.

The dairy industries have brought greater participation of the private sector. This is also consistent with global trends which could hopefully lead greater integration at Indian dairying with the world market for milk and milk products. After, stagnating to 80 million tonnes for 20 years between 1950 and 1970 Indian Milk production began to rise. Crossing 30 million tonnes in 1980 and 59 million tonnes in 1992. Today India Ranks as the world second largest milk producer after U.S.

Review of Literature:

Jawana Ram made a case study on the marketing of milk products in Rajasthan. Tetra-pack, butter, Ghee, skimming milks powder were marketed through three kinds of channels of distribution. The first channel was concerned with the direct sale of milk to consumers. The second channel i.e. retail agents, were engaged in both milk and milk products, and in the third channel wholesalers were engaged for distributing milk products.

Pitchai showed that the quantum of milk procurement depended on monsoons and the price offered by private traders to co-operatives. He compared the cost increases in four unions. The production cost and sales price were Rs. 7.31 and 7.79 in Salem union, when compared to those in Erode (Rs. 7.44 and Rs. 7.91) All the unions-supply milk to the federation at Rs. 6.48 per liter, which was less than the cost. Transportation cost was the major component in the distribution cost of milk. A majority of non-buyers of Aavin products reported that required quantity was not available. The procedure of lodging complaint in Aavin was uneasy. Chahal Organized a study in Punjab. The milk was sold to co-operative societies, milk collection centers, milk contactors, milk vendors, sweet shops and local customers. The study pointed out that the percentage of milk sold to milk vendors had decreased with the increase in farm size. With increasing marketable surplus milk producers curtailed the sales to milk

vendors and preferred sweet shops. This was because of price differentiate. Further, the author viewed there was a need to strengthen the milk co-operatives so as to make milk availability a successful venture.

Acharya, and Pawar reported that the average daily and total milk production per lactation of cross breed cows was 8.68 litres and 2,609 liters respectively. The respective figures for buffaloes and local cows were 4.13 and 1,359 liters and 2.26 and 604 liters respectively. It was found that the per day per animal labor utilization was the highest in cross-breed cows, at 2.02 hours as compared to 2.53 hours in a buffalo, and local cow. It was shown that profitability more in cross breeding programme than in traditional local cows.

Objectives:

The main objective of the study to examine the Dairy Development in India and Andhra Pradesh

DAIRY INDUSTRY IN INDIA

During the 1950s and 1960s, India had a milk shortage and was dependent on imports; annual production growth was negative for several years. Throughout the first decade after independence, milk production recorded a CAGR of 1.64 percent, which fell to 1.15 percent during the 1960s.

Today much of the South faces the implications of sharply altered economic policies, many of which focus on capital-intensive investment that largely serves urban-sector requirements. In this context, it is imperative to find ways in which to advance South-South technology transfer, particularly technologies that directly improve the economic welfare and quality of life in rural areas. In this respect, India was fortunate to have been the first country to gain independence from colonial rule. In more than 40 years of independence, experiments have been made with a number of approaches towards developing the dairy industry and, as a consequence, it is possible that the Indian experience may hold lessons of interest and use to many of those concerned with balanced and sustainable development. It should be made clear that India's experience is by no means the only one possible. While there is definitely something to share, much can also be learned from the experience of others. One lesson is mandatory, however: success in dairying, or in any other agricultural field, depends on

ensuring that control of the resources created remains with the producers.

MILK PRODUCTION IN INDIA

India is the leading milk-producing country worldwide, accounting for one-fifth of the global milk production. Over the last decade, production has increased at 5.5 percent annually, with 254.55 million tonnes of milk being produced in FY 2021-22.

Table 1 depicts that the Year wise milk production and Per capita availability in India. India ranks first among the world's milk producing Nations since 1998 and has the largest bovine population in the World. Milk production in India during the period 2010-11 to 2021-22, has increased from 121.80 million tonnes to 254.55 million tonnes. The per capita availability of milk in the country which was 281 gram per day during 2010-11 has increased to 515 gram per day in 2021-22. This represents sustained growth in the availability of milk and milk products for our growing population.

Table 1-Year wise milk production and Per capita availability in India

Year	Production (in Million Tonnes)	Per capita availability (gms/day)
2010-11	121.80	281
2011-12	127.90	290
2012-13	132.40	299
2013-14	137.70	307
2014-15	146.30	322
2015-16	155.50	337
2016-17	165.40	355
2017-18	176.30	375
2018-19	187.70	394
2019-20	198.40	407
2020-21	209.96	427
2021-22	254.55	515

Source: National Dairy Development Board

Table 2 exhibits that the state wise and year wise milk production in India. It could be seen from the table in the Andhra Pradesh state milk production increased from 11203 tonnes to 16350 tonnes in between the years 2010-11 and 2021-22. In the year 2010-11, out of 121844 tonnes milk production, share of Andhra Pradesh was 11203 tonnes, Andaman and Nicobar Islands was 25 tonnes, Arunachal Pradesh was 28 tonnes, Assam was 790 tonnes, Bihar was 6517 tonnes, Chandigarh was 45 tonnes, Chhattisgarh was 1029 tonnes, Dadra & Nagar Haveli was 11 tonnes, Daman & Diu was 1 tonne, Delhi was 480 tonnes, Goa

was 60 tonnes, Gujarat was 9321 tonnes, Haryana was 6267 tonnes, Himachal Pradesh was 1102 tonnes, Jammu and Kashmir was 1609 tonnes, Jharkhand was 1555 tonnes, Karnataka was 5114 tonnes, Kerala was 2645 tonnes, Lakshadweep was 2 tonnes, Madhya Pradesh was 7514 tonnes, Maharashtra was 8044 tonnes, Manipur was 78 tonnes, Meghalaya was 79 tonnes, Mizoram was 11 tonnes, Nagaland was 76 tonnes, Odisha was 1671 tonnes, Puducherry was 47 tonnes, Punjab was 9423 tonnes, Rajasthan was 13234 tonnes, Sikkim was 43 tonnes, Tamil Nadu was 6831 tonnes, Tripura was 104 tonnes, Uttar Pradesh was 21031 tonnes, Uttarakhand was 1383 tonnes and West Bengal was 4471 tonnes respectively are recorded.

Table 2-State and year wise milk production in India

(In thousand Tonnes)

State/Union Territory	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Andhra Pradesh	11203	12088	12762	13007	9656	10817	12178	13725	15044	15263	16350	
Andaman and Nicobar Islands	25	26	21	14	16	15	16	17	18	19	20	
Arunachal Pradesh	28	22	23	43	46	50	53	54	55	61	65	
Assam	790	796	800	815	829	843	861	872	882	920	985	
Bihar	6517	6643	6845	7197	7775	8288	8711	9242	9818	10480	11202	
Chandigarh	45	45	44	44	44	43	36	42	45	49	56	
Chhattisgarh	1029	1119	1164	1209	1232	1277	1374	1469	1567	1676	1846	
Dadra & Nagar Haveli	11	11	11	11	9	9	8	8	8	8	8	
Daman & Diu	1	1	1	1	1	1	1	1	1	1	1	
Delhi	480	502	287	284	280	281	279	279	279	279	280	
Goa	60	60	61	68	67	54	51	55	57	61	63	
Gujarat	9321	9817	10315	11112	11691	12262	12784	13569	14493	15292	15680	
Haryana	6267	6661	7040	7442	7901	8381	8975	9809	10726	11735	12242	
Himachal Pradesh	1102	1120	1139	1151	1172	1283	1329	1392	1460	1531	1587	
Jammu and Kashmir	1609	1614	1631	1615	1951	2273	2376	2460	2540	2506	2608	
Jharkhand	1555	1745	1679	1700	1734	1812	1894	2016	2183	2321	2435	
Karnataka	5114	5447	5718	5997	6121	6344	6562	7137	7901	9031	9245	
Kerala	2645	2716	2791	2655	2711	2650	2520	2576	2548	2544	2735	
Lakshadweep	2	2	2	6	4	3	3	4	4	4	4	
Madhya Pradesh	7514	8149	8838	9599	10779	12148	13445	14713	15911	17109	17210	
Maharashtra	8044	8469	8734	9089	9542	10153	10402	11102	11655	12024	12450	
Manipur	78	79	80	82	82	79	79	82	86	90	92	
Meghalaya	79	80	81	82	83	84	84	85	87	88	90	
Mizoram	11	14	14	15	20	22	24	25	26	24	26	
Nagaland	76	78	79	81	76	77	79	74	73	62	63	
Odisha	1671	1721	1724	1861	1903	1930	2003	2088	2311	2370	2480	
Puducherry	47	45	47	47	48	48	48	49	49	50	51	
Punjab	9423	9551	9724	10011	10351	10774	11282	11855	12599	13348	13680	
Rajasthan	13234	13512	13946	14573	16934	18500	20850	22427	23668	25573	26430	
Sikkim	43	45	42	46	50	67	54	59	61	84	86	

Tamil Nadu	6831	6968	7005	7049	7132	7244	7556	7742	8362	8759	8926
Telangana	0	0	0	0	4207	4442	4681	4965	5416	5590	6245
Tripura	104	111	118	130	141	152	160	174	185	199	202
Uttar Pradesh	21031	22556	23330	24194	25198	26387	27770	29052	30519	31864	32450
Uttarakhand	1383	1417	1478	1550	1565	1656	1692	1742	1792	1845	1925
West Bengal	4471	4672	4859	4906	4961	5038	5183	5389	5607	5869	6125
ALL INDIA	12184	12790	13243	13768	14631	15548	16540	17635	18803	19872	20594
	4	2	3	6	2	7	3	0	6	9	3

Source: Basic Animal Husbandry Statistics, Ministry of Fisheries, Animal Husbandry & Dairying, Government of India.

Note: Includes Telangana till 2013-14, All India data are inclusive of all States and Union Territories.

Rashtriya Gokul Mission

To enhance milk output and productivity, which will increase farmers’ income from dairying, the Rashtriya Gokul Mission (which aims to genetically improve the cattle population and promote and conserve indigenous cattle breeds) has been given a five-year extension for implementation. Under the mission, farmers now have access to several cutting-edge technologies at their doorstep, including sex-sorted semen, IVF technique and genomic selection. Milk production will rise from 198.4 million metric tonnes in 2019-20 to 300 million metric tonnes in 2024-25 with the implementation of the planned program. An increase in milk production of an average of 1,200 kg per animal per year will directly assist eight crore dairy producers.

The Rashtriya Gokul Mission (RGM) is being implemented for development and conservation of indigenous bovine breeds since December 2014. The scheme is important in enhancing milk production and productivity of bovines to meet growing demand of milk and making dairying more remunerative to the rural farmers of the country. The scheme is also continued under umbrella scheme Rashtriya Pashudhan Vikas Yojana from 2021 to 2026 with a budget outlay of Rs.2400 crore. The RGM will result in enhanced productivity and benefit of the program, percolating to all cattle and buffaloes of India especially with small and marginal farmers. This program will also benefit women in particular since over 70% of the work involved in livestock farming is undertaken by women.

Table 3 shows that the year wise allocation and expenditure made under RGM in India. It is observed from the table allocation of Rs.663 crore has been made available under the scheme during 2021-22 and expenditure of Rs.491.28 crore. Year-wise

allocation and expenditure made under the scheme since inception is as under.

Rashtriya Gokul Mission allocation of Rs.159.4 crores and expenditure were Rs.159.02 crores in the year 2014-15, it was increased from Rs.663.0 crores and expenditure were Rs.491.28 crores during 2021-22 recorded.

Table 3 Year wise allocation and expenditure made under RGM in India

Financia l	Rs. in Crore							
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Allocati on	159.4	81.77	119.5	190	750.5	270	400	663.0
Expendi ture	159.02	81.76	118.75	187.64	750.44	269.73	399.9	491.28

Source: Annual Reports of 2021-22, Department of animal husbandry and dairying ministry of fisheries, animal husbandry and dairying Government of India.

WORLD FOCUS ON INDIAN DAIRY INDISTRY

India dairying is emerging a sunrise Industry India represents one of the world’s largest and fastest growing markets for milk and milk products due to the increasing disposable among the 250 million strong classes.

Two main reasons for the world focus on India are one, the low-cost economy; and two the liberalization process initiated since 1991. Other important factors include: low inflation rate, inexpensive labour the presence of the world’s largest democracy. Efforts to increase milk product by dairy farmers are strongly influenced by the degree to which demand signal are transmitted though the marketing system.

World milk production is forecast to reach 928 million tonnes in 2021, 1.5 percent higher than in 2020, with anticipated output expansions in all regions, led by Asia and North America. Rising dairy cattle numbers, farm productivity improvements and investments are driving the increase in Asia, especially in India, China and Pakistan.

Exports of Dairy Products

India’s export of dairy products has witnessed a steady rise over the last three years. Table 4 shows that the commodity and year wise Exports of Milk Products in India. In th year 2010-11, exports from India to other countries, quantity of 4215.20 million

tonnes were milk and cream, 6215.02 million tonnes were milk powder, 189.63 million tonnes were fermented and acidified milk products, 42.15 million tonnes were whey and whey products, 4150.15 million tonnes were butter/ ghee/ butter oil and 5516.36 million tonnes were cheese and curd out of 20328.51 million tonnes. It was gradually increased to 8594.99 million tonnes were milk and cream, 37000.51 million tonnes were milk powder, 1101.68 million tonnes were fermented and acidified milk products, 124.34 million tonnes were whey and whey products, 18457.55 million tonnes were butter/ ghee/ butter oil and 5442.57 million tonnes were cheese and curd out of 70721.64 million tonnes during 2021-22.

Table 4 Commodity and year wise Exports of Milk Products in India

(In Million Tonnes)

Commodity	Years											
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Milk and Cream	42.15	45.15	47.5	48.17	50.12	52.5	88.57	10.18	13.81	11.30	85.94	
Milk Powder	62.0	63.6	65.8	69.2	71.6	78.4	20.59	47.98	37.58	16.85	37.00	
Fermented and Acidified Milk Products	18.9	21.5	23.5	31.0	34.5	38.9	68.8	80.9	99.4	11.07	11.01	
Whey	42.1	48.9	51.5	54.3	55.1	57.7	18.2	91.6	31.1	22.4	12.4	

Commodity	Years											
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Milk and Cream	55.16	56.36	58.2	59.2	60.3	61.8	59.15	60.12	61.8	63.5	69.35	76.91
Milk Powder	62.0	63.6	65.8	69.2	71.6	78.4	20.59	47.98	37.58	16.85	37.00	
Fermented and Acidified Milk Products	18.9	21.5	23.5	31.0	34.5	38.9	68.8	80.9	99.4	11.07	11.01	
Whey	42.1	48.9	51.5	54.3	55.1	57.7	18.2	91.6	31.1	22.4	12.4	
Total	203.28	222.02	223.5	242.48	256.7	274.1	324.95	349.67	377.49	53.87	113.37	151.47

Source: Annual Reports of 2021-22, Department of animal husbandry and dairying ministry of fisheries, animal husbandry and dairying Government of India

Table 5 depicts that the commodity and year wise imports of Milk Products in India. It is evident from the table India imports milk products from other countries, in the year 2010-11, 128.69 million tonnes were milk and cream, 286.23 million tonnes were milk powder, 25.25 million tonnes were fermented and acidified milk products, 1092.15 million tonnes were whey and whey products, 2845.65 million tonnes were butter/ ghee/ butter oil, and 1242.36 million tonnes were cheese and curd out of 5620.33 million tonnes. Out of 5790.74 million tonnes 129.85 million tonnes were milk and cream, 297.14 million tonnes were milk powder, 28.69 million tonnes were fermented and acidified milk products, 1101.25 million tonnes were whey and whey products, 2958.45 million tonnes were butter/ ghee/ butter oil, and 127.36 million tonnes were cheese and curd in the year 2011-12.

During the year 2012-13, 130.25 million tonnes were milk and cream, 3472.15 million tonnes were milk powder, 30.15 million tonnes were fermented and acidified milk products, 11128.36 million tonnes were whey and whey products, 3012.52 million tonnes were

butter/ ghee/ butter oil, and 1302.54 million tonnes were cheese and curd out of 15945.97 million tonnes. In the year 2013-14, 134.69 million tonnes were milk and cream, 357.18 million tonnes were milk powder, 33.45 million tonnes were fermented and acidified milk products, 11129.85 million tonnes were whey and whey products, 3102.32 million tonnes were butter/ ghee/ butter oil, and 1328.02 million tonnes were cheese and curd out of 16085.51 million tonnes. Out of 13011.57 million tonnes, in the year 2014-15 imports, 136.25 million tonnes were milk and cream, 364.20 million tonnes were milk powder, 33.85 million tonnes were fermented and acidified milk products, 11131.02 million tonnes were whey and whey products, 3232.56 million tonnes were butter/ ghee/ butter oil, and 1346.25 million tonnes were cheese and curd. In the year 2015-16, 138.77 million tonnes were milk and cream, 383.80 million tonnes were milk powder, 34.22 million tonnes were fermented and acidified milk products, 11131.31 million tonnes were whey and whey products, 3266.01 million tonnes were butter/ghee/butter oil, and 1356.34 million tonnes were cheese and curd out of 16310.45 million tonnes. During the year 2016-17, 711.12 million tonnes were milk and cream, 1392.78 million tonnes were milk powder, 707.68 million tonnes were fermented and acidified milk products, a high portion imports was 17087.30 million tonnes were whey and whey products, 1205.55 million tonnes were butter/ ghee/ butter oil, and 1578.76 million tonnes were cheese and curd out of 22683.19 million tonnes.

During the year 2017-18, 1623.86 million tonnes were milk and cream, 464.94 million tonnes were milk powder, 221.06 million tonnes were fermented and acidified milk products, 7985.78 million tonnes were whey and whey products, 423.52 million tonnes were butter/ ghee/ butter oil, and 1793.92 million tonnes were cheese and curd out of 12513.08 million tonnes. In the year 2019-20, 450.37 million tonnes were milk and cream, 1321.76 million tonnes were milk powder, 1127.91 million tonnes were fermented and acidified milk products, 12733.43 million tonnes were whey and whey products, 401.98 million tonnes were butter/ ghee/ butter oil, and 1792.38 million tonnes were cheese and curd out of 17827.83 million tonnes. During the year 2020-21, 233.79 million tonnes were milk and cream, 438.84 million tonnes were milk powder, a small portion 20.03 million tonnes were

fermented and acidified milk products, 14088.29 million tonnes were whey and whey products, 598.20 million tonnes were butter/ ghee/ butter oil, and 804.12 million tonnes were cheese and curd out of 16183.27 million tonnes. During the year 2021-22, 190.59 million tonnes were milk and cream, 189.84 million tonnes were milk powder, 1.82 million tonnes were fermented and acidified milk products, 9197.62 million tonnes were whey and whey products, 107.76 million tonnes were butter/ ghee/ butter oil, and 1107.41 million tonnes were cheese and curd out of 10795.07 million tonnes.

Table 5Commodity and year wise imports of Milk Products in India

(In Million Tonnes)

Commodity	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2019-20	2020-21	2021-22
Milk and cream	128.69	129.85	130.25	131.69	132.25	133.77	134.12	1623.86	450.37	233.79	190.59
Milk powder	28.23	29.14	30.15	31.18	32.20	33.80	34.78	464.94	1321.76	438.84	189.84
Fermented and acidified Milk Products	25.5	28.9	30.5	33.5	33.5	34.2	70.68	221.06	1127.91	20.03	1.82
Whey and Whey Products	1092.15	1101.25	1112.36	1123.85	1134.02	1145.31	1730.30	7985.78	12513.08	14088.29	9197.62
Butter/ Ghee/ Butter Oil	28.45	29.58	30.12	31.02	32.32	32.66	12.05	42.3	401.98	598.20	107.76
Cheese	12.42	12.75	13.02	13.28	13.46	13.56	15.78	17.93	17.84	80.4	110.74

s e a n d C u r d											
Tot al	56 20 .3 3	57 90 .7 4	15 94 5. 97	16 08 5. 51	13 01 1. 57	16 31 0.4 5	22 68 3.1 9	12 51 3. 08	17 82 7.8 3	16 18 3.2 7	10 79 5.0 7

Source: Annual Reports of 2021-22, Department of animal husbandry and dairying ministry of fisheries, animal husbandry and dairying Government of India

National Programme for Dairy Development (NPDD) NPDD has been in place since February 2014 and aims to build or strengthen infrastructure for the production of high-quality milk as well as for the procurement, processing, and marketing of milk and milk products through the State Implementing Agency or State Cooperative Dairy Federation. In July 2021, the program underwent restructuring /realignment. From 2021-22 to 2025-26, the redesigned NPDD scheme will be implemented with a budget of Rs.1790 crores. The programs objectives include enhancing the quality of milk and milk-derived products and growing the organized market share for procurement, processing, value addition and marketing.

The Department is implementing Central Sector Scheme- “National Programme for Dairy Development (NPDD)” across the country since Feb-2014 with an objective of creating/ strengthening of infrastructure for Production of quality milk, Procurement, Processing and Marketing of Milk & Milk Products through State Implementing Agency (SIA) i.e State Cooperative Dairy Federation.

Table 6 exposes that the state wise financial progress under the National Programme for Dairy Development in India. It could be seen from the table total number projects sanctioned were 161 in India, share of 3 projects were Andhra Pradesh, 2 projects each were Arunachal Pradesh, Assam, Goa and Jharkhand states, 17 projects were Bihar, 6 projects each were Gujarat, Odisha and Uttar Pradesh states, 4 projects each were Haryana, Nagaland, Himachal Pradesh and Jammu & Kashmir states, 9 projects were Kerala, 11 projects were Madhya Pradesh, 7 projects each were Tamil Nadu, Karnataka and Punjab states, 19 projects were a high portion Rajasthan state, 5 projects each were Sikkim, Telangana and Meghalaya

states, 3 projects each were Tripura, Maharashtra, Manipur, Mizoram, Uttarakhand, West Bengal, Chhattisgarh and Puducherry.

Andhra Pradesh state of Rs.2211.74 lakhs, Arunachal Pradesh state of Rs.372.31 lakhs, Assam state of Rs.82.72 lakhs, Bihar state of Rs.11501.43 lakhs, Chhattisgarh state of Rs.586.64 lakhs, Goa state of Rs.137.23 lakhs, Gujarat state of Rs.5395.14 lakhs, Haryana state of Rs.1228.73 lakhs, Himachal Pradesh state of Rs. 1372.63 lakhs, Jammu & Kashmir state of Rs.4131.14 lakhs, Jharkhand state of Rs.330.98 lakhs, Karnataka state of Rs.5796.50 lakhs, Kerala state of Rs.9066.21 lakhs, Madhya Pradesh state of Rs.4407.38 lakhs, Maharashtra state of Rs.1086.60 lakhs, Manipur state of Rs.1435.04 lakhs, Meghalaya state of Rs.1635.58 lakhs, Mizoram state of Rs.907.53 lakhs, Nagaland state of Rs.675.35 lakhs, Odisha state of Rs.3404.18 lakhs, Puducherry state of Rs.274.08 lakhs, Punjab state of Rs.6281.67 lakhs, Rajasthan state of Rs.10246.83 lakhs, Sikkim state of Rs.2238.56 lakhs, Tamil Nadu state of Rs.4532.77 lakhs, Telangana state of Rs.2210.26 lakhs, Tripura state of Rs.187.02 lakhs, Uttar Pradesh state of Rs.709.19 lakhs, Uttarakhand state of Rs.3169.26 lakhs and West Bengal state of Rs.284.91 lakhs out of 85899.59 lakhs funds utilized for the development of dairy industry.

Table 6 State wise financial progress under the National Programme for Dairy Development in India

(Rs.in lakhs)

S . N o.	Name of State	No. of projects sanctioned	Approved Cost	Central Share	Total Releases	Funds Utilised	Unspent
1	Andhra Pradesh	3	3242.60	2883.97	2212.18	2211.74	0.45
2	Arunachal Pradesh	2	1191.33	1126.40	883.50	372.31	511.19
3	Assam	2	3435.90	3265.49	455.09	82.72	0.00
4	Bihar	17	26322.54	21019.23	20407.09	11501.43	8011.18
5	Chhattisgarh	3	2338.99	2096.11	1114.36	586.64	527.72
6	Goa	2	1689.97	1393.45	873.81	137.23	736.57
7	Gujarat	6	32776.94	20126.80	18929.80	5395.14	12478.48
8	Haryana	4	2523.99	2132.74	1516.65	1228.73	287.92
9	Himachal Pradesh	4	4297.12	3948.47	3244.70	1372.63	1872.07
10	Jammu & Kashmir	4	15111.51	13980.77	7709.91	4131.14	3578.77
11	Jharkhand	2	2093.97	1765.97	718.90	330.98	323.78

12	Karnataka	7	17519.10	12552.30	7248.80	5796.50	1452.30
13	Kerala	9	13020.39	9750.71	9702.48	9066.21	636.26
14	Madhya Pradesh	11	6361.30	5473.98	5420.86	4407.38	1013.48
15	Maharashtra	3	4946.98	4507.17	3192.29	1086.60	2105.69
16	Manipur	3	3029.04	2784.90	2340.90	1435.04	905.86
17	Meghalaya	5	4566.49	4125.22	2757.27	1635.58	1121.69
18	Mizoram	3	1100.64	1031.13	1031.13	907.53	123.60
19	Nagaland	4	1306.44	1214.61	819.90	675.35	144.55
20	Odisha	6	5407.68	4981.94	4539.99	3404.18	1097.39
21	Puducherry	3	341.75	325.15	322.12	274.08	39.47
22	Punjab	7	12496.99	8357.81	8172.29	6281.67	1890.62
23	Rajasthan	19	17925.29	14444.80	12946.97	10246.83	2659.14
24	Sikkim	5	3282.80	3053.49	3047.87	2238.56	809.31
25	Tamil Nadu	7	14599.67	10580.76	9126.69	4532.77	4593.92
26	Telangana	5	3836.74	3197.56	2688.59	2210.26	478.33
27	Tripura	3	2292.10	2025.87	1421.73	187.02	1234.71
28	Uttar Pradesh	6	7985.03	6648.73	4459.18	709.19	131.69
29	Uttarakhand	3	4160.33	3371.88	3347.56	3169.26	178.30
30	West Bengal	3	403.47	393.47	363.16	284.91	71.47
	Grand total	161	219607.08	172560.87	141015.74	85899.59	49015.90

Source: Annual Reports of 2021-22, Department of animal husbandry and dairying ministry of fisheries, animal husbandry and dairying Government of India

DAIRY INDUSTRY IN ANDHRA PRADESH

With implantation of operation flood-3 programmed in Andhra Pradesh in tempo of dairy development has gained movements providing a new thrust to eradication of poverty and unemployment in rural areas and brought greater awakening the confidence among milk producers to manage a loan affair through dairy co-operative on Anand patterns, the federation is marching a head with dairy co-operatives to held a new area of rural programs.

GENESIS OF DAIRY INDUSTRY

Planning for organizes dairy industry in Andhra Pradesh was conceived in 1951 and pilot milk supply scheme was started in 1960-61 as a paradise for the integrated milk project. Hyderabad and Vijayawada for which the UNICER gifted dairy equipment valued at 1 core with the objectives of lining up and supplying surplus milk from producing areas to consuming area.

Andhra Pradesh Dairy Development co-operatives on was formed on 02.04.1974 as a state government undertaking for the application of commercial principal with the mission of industrializing rural dairying and extensive infrastructure was developed to objectives generation grater employment opportunities to the rural people where they are abused.

Andhra Pradesh Dairy Development co-operative federation constructed in October 1981 and active involvement of program is organizing milk production procurement processing and marketing national policy government of India. The Indian diary corporation offered financial assistance of Rs 78.51 corers for dairy development program in Andhra Pradesh with 30 percent grand and 70 percent on loan basis.

Dairy Units

At present there are 54 dairy units in operation with 7 milk product factories, 38 milk chilling and cooling apart from dairy units there are 6 cattle filed mining plants under the federation.

Marketing

The surplus milk is converted into various dairy products like Vijaya spray food butter, whole milk powder. Skimmed milk powder ghee etc., with the brand name Vijaya. They have secured good market reputation all over Indian besides foreign products like ice cream, Choco bar etc., are also manufactured by the federation.

Dairy Cooperation

With the commencement of operation flood-2.2161 village dairy co-operative sectors have been organized with the enrolment of 1,62,000 members under the formers programs, 863 milk producers were deputed to on study working of Anand pattern dairy co-operative society. 17,480 fodder milk storages were supplied to the production under the product development program. The milk procurement but the co-operative societies accounted for the 60 percent of the total milk procurement in the state.

DAIRY DEVELOPMENT IN ANDHRA PRADESH

Andhra Pradesh is the fifth largest state in India in terms of area and human population. According to 1991 census, the population of the State stood at 66.4 million forming 7.86 percent of country's population.

The state has a predominant rural population constitution 73.1 percent of the total. Agriculture is the main source of livelihood for about 70 percent of the labour force and contributes to the net domestic production of the state to the extent of about 30 percent. The state is divided into three regions, viz., the Coastal Andhra, Telangana and Rayalaseema. While Coastal Andhra is often exposed to floods, Telangana and Rayalaseema regions are drought prone. Because of the uncertainty in agricultural production either due to occurrence of floods or due to scanty and erratic rainfall, dairying serves as a useful subsidiary occupation for a substantial section of rural people. Further, the state has a huge bovine population consisting of some of the best breeds of cattle (Ongles, Hallicars, Krishna Valley, Deoni and Malva) and buffaloes (Murrah and Marathwada). According to the 15th Quinquennial Livestock Census, 1993, the bovine population of the state was 200.80 lakhs consisting of 109.47 lakh cattle (54.52 percent) and 91.33 lakh buffaloes (45.48 percent). Milch animals accounted for 78.38 lakhs consisting of 30.31 lakh cows (38.67 percent) and 48.07 lakh buffaloes (61.33 percent). Thus, Andhra Pradesh has a good potential for dairying. As such, the state government has been spending large sums of money on dairy development under its Five-Year Plans.

Table 7 reveals that while the expenditure on animal husbandry and dairying increased from Rs. 2.7 crores during the Second Plan to Rs. 34.38 Crores during the Seventh Plan to Rs. 34.38 Crores during the Seventh Plan, in relative terms, as percentage to the total expenditure on agriculture, it has declined from 9.16 percent to 4.19 percent. As regards the expenditure on dairying, it has increased from Rs. 0.34 crores in the Second Plan to Rs. 14.18 crores in the Sixth plan but decreased to Rs. 9.4 crores during the Seventh Plan. In terms of percentage of expenditure on dairying to the total expenditure on animal husbandry and dairying, it has increased from 12.59 percent during the Second Plan to 58.14 percent during the Sixth Plan but declined to 27.34 percent during the Seventh Plan. After seventh plan it is increased to twelfth plan.

Table 7 Investment of Animal Husbandry and Dairying under Five Year Plans in Andhra Pradesh

(Rs. in Crores)

S.No.	Plan Period	Animal Husbandry and Dairying	Dairying
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1	Second Plan (1956-61)	2.70 (9.16)	0.34 (12.59)
2	Third Plan (1961-66)	4.47 (9.12)	2.56 (57.27)
3	Annual Plans (1966-69)	3.6 (10.32)	1.87 (52.31)
4	Fourth Plan (1969-74)	5.15 (15-26)	3.42 (66.40)
5	Fifth Plan (1974-79)	10.33 (11.00)	6.29 (60.99)
6	Annual Plan (1979-80)	2.57 (6.01)	1.70 (66.15)
7	Sixth Plan (1980-85)	24.39 (6.94)	14.18 (58.14)
8	Seventh Plan (1985-90)	34.38 (4.19)	9.40 (27.34)
9	Eighth Plan (1991-96)	36.23 (5.63)	11.42 (31.20)
10	Ninth Plan (1997-2001)	39.21 (5.45)	12.36 (32.32)
11	Tenth Plan (2002-06)	41.12 (6.22)	13.25 (33.33)
12	Eleventh Plan (2007-12)	43.78 (6.88)	14.35 (36.23)
13	Twelfth Plan (2012-17)	45.32 (7.24)	15.87 (37.12)

Source: "Trends in Milk Production in A.P." Economic and Statistical Bulletin, Jan- March, 1993, Directorate of Economics and Statistics, Government of Andhra Pradesh, Hyderabad, P.6.

Note: The figures in the parentheses show the percentage of investment of animal Husbandry and dairying to the total investment on agriculture. The figures in the parentheses show the percentage of investment of dairying to the total investment on animal husbandry and dairying.

In spite of huge bovine population and the large-scale investment on dairying, the state's performance in terms of milk production is not all that satisfactory Table 8 presents the details of milk production in Andhra Pradesh from 2010-11 to 2019-20.

Table 8 depicts that the district and Year wise Bovine Milk Production in the state of Andhra Pradesh. From the Table 8 shows that while there is a stable increase in milk production in the India between 2019-20 and 2010-11, it could be noticed in the growth of milk production in Andhra Pradesh.

In the 2010-11, out of 7735 MT, from Anantapur was 433 MT, from Chittoor was 851 MT, from East Godavari was 667 MT, from Guntur was 913 MT, from Kadapa was 291 MT, from Krishna was 818 MT, from Kurnool was 511 MT, from Nellore was 431 MT, from Prakasam was 920 MT, from Srikakulam was 348 MT, from Visakhapatnam was 509 MT, from

Vizianagaram was 356 MT and from West Godavari was 687 MT. It is gradually increased, from Anantapur was 982 MT, from Chittoor was 1502 MT, from East Godavari was 1304 MT, from Guntur was 1432 MT, from Kadapa was 701 MT, from Krishna was 1194 MT, from Kurnool was 1135 MT, from Nellore was 852 MT, from Prakasam was 1410 MT, from Srikakulam was 701 MT, from Visakhapatnam was 802 MT, from Vizianagaram was 795 MT and from West Godavari was 1285 MT out of 14095 MT in the year 2019-20 respectively are recorded.

Table 8 District and Year wise Bovine Milk Production in the state of Andhra Pradesh

Name of the Districts	Bovine Milk Production (*000 MT)									
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Anantapur	433	470	482	671	710	768	806	875	925	982
Chittoor	851	938	948	1163	1195	1292	1345	1452	1498	1502
East Godavari	667	751	829	962	978	1021	1125	1252	1295	1304
Guntur	913	998	977	1165	1196	1215	1289	1325	1396	1432
Kadapa	291	295	319	418	510	598	612	625	675	701
Krishna	818	920	989	992	1021	1085	1096	1115	1165	1194
Kurnool	511	515	706	917	925	985	1020	1035	1124	1135
Nellore	431	474	559	620	634	676	714	795	802	852
Prakasam	920	990	1054	1174	1195	1258	1325	1364	1389	1410
Srikakulam	348	380	426	498	502	532	586	632	644	701
Visakhapatnam	509	539	552	573	596	602	698	714	775	802
Vizianagaram	356	390	414	503	555	598	602	625	637	795
West Godavari	687	742	833	957	985	1025	1130	1196	1203	1285
Andhra Pradesh	7735	8402	9084	10613	11002	11655	12348	13000	13528	14095

SOURCE: Integrated Sample Survey Reports, Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

NOTE: Reproduced from Integrated Sample Survey (ISS) reports published by the Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

Table 9 examines that the district and year wise Indigenous Cattle Milk Production in the state of Andhra Pradesh. Indigenous Cattle Milk Production increased from 68.9 to 141.8 in Anantapur district, increased from 170.4 mt to 401.8 mt in Chittoor district, increased from 23.1 mt to 94.7 mt East Godavari district, increased from 47.7 mt to 82.3 mt Guntur district, increased from 15.9 mt to 40.5 mt Kadapa district, increased from 23.1 mt to 63.5 mt Krishna district, increased from 70.4 mt to 285.3 mt Kurnool district, increased from 10.9 mt to 31.8 mt Nellore district, increased from 32.4 mt to 67.6 mt Prakasam district, increased from 80.1 mt to 110.4 mt

Srikakulam district, increased from 33.8 mt to 92.5 mt Visakhapatnam district, increased from 44.6 mt to 115.2 mt Vizianagaram district and increased from 37.5 mt to 96.2 mt West Godavari district in between 2010-11 and 2019-20.

Table 9 District and Year wise Indigenous Cattle Milk Production in the state of Andhra Pradesh

Name of the Districts	Indigenous Cattle Milk Production (*000 MT)									
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Anantapur	68.9	74.6	77.4	104.5	110	115.2	120.6	125.8	132.6	141.8
Chittoor	170.4	192.8	198.8	273.2	285.6	302.5	320.8	352.6	385.2	401.8
East Godavari	23.1	25.5	28.1	48.4	54.2	56.2	63.8	75.2	81.9	94.7
Guntur	47.7	52.8	48	62.1	63.5	68.9	72.4	76.7	79.2	82.3
Kadapa	15.9	15.8	16.4	22.1	25.8	26.9	29.5	32.4	36.4	40.5
Krishna	23.1	10.6	11.6	40.5	42.6	46.8	52.1	59.7	61.5	63.5
Kurnool	70.4	68.3	88.4	189.5	192	201.5	216.8	235.7	274.6	285.3
Nellore	10.9	13.1	13.1	20.8	21.8	22.8	23.8	28.6	29.7	31.8
Prakasam	32.4	33.4	34.5	44.7	42.5	48.9	48.2	56.3	62.4	67.6
Srikakulam	80.1	86.9	95.7	86.6	88.5	91.2	98.7	100.2	106.7	110.4
Visakhapatnam	33.8	35.3	35.2	68.5	71.2	76.4	79.5	81.4	89.8	92.5
Vizianagaram	44.6	50	51.2	80.9	88.6	92.4	93.8	98.6	104.5	115.2
West Godavari	37.5	39.7	43.3	47.7	54.6	55.8	68.8	73.9	81.5	96.2
Andhra Pradesh	658.8	698.8	741.7	1089.2	1142.2	1205.6	1292.1	1396.4	1526.6	1623.6

SOURCE: Integrated Sample Survey Reports, Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

NOTE: Reproduced from Integrated Sample Survey (ISS) reports published by the Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

Table 10 examines that the district and year wise Crossbred Cattle Milk Production in the state of Andhra Pradesh. Crossbred Cattle Milk Production increased from 85 mt to 385.6 mt from Anantapur district, increased from 564.5 mt to 1285.6 mt from Chittoor district, increased from 140.2 mt to 525.3 mt from East Godavari district, increased from 61.3 mt to 150.7 mt from Guntur district, increased from 29.7 mt to 115.2 mt from Kadapa district, increased from 51.7 mt to 120.8 mt from Krishna district, increased from 33.9 mt to 120.2 mt from Kurnool district, increased from 43 mt to 125.8 mt from Nellore district, increased from 82.9 mt to 130.0 mt from Prakasam district, increased from 147 mt to 425.3 mt from Srikakulam district, increased from 153.8 mt to 391.7 mt from Visakhapatnam district, increased from 143.2 mt to 392.8 mt from Vizianagaram district and increased from 76.3 mt to 164.2 mt from West Godavari district

in between the years 2010-11 and 2019-20 in the state of Andhra Pradesh.

Table 10 District and Year wise Crossbred Cattle Milk Production in the state of Andhra Pradesh

Name of the Districts	Crossbred Cattle Milk Production ('000 MT)									
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Anantapur	85	89.7	109.8	297.1	310.2	320.4	330.5	341.5	352.8	385.6
Chittoor	564.5	621.2	738.9	1041.5	1120.2	1185.6	1194.8	1201.7	1245.6	1285.6
East Godavari	140.2	154.8	204.3	265.6	302.5	315.6	356.8	410.3	482.3	525.3
Guntur	61.3	79.5	67	81.6	97.5	101.6	110.8	120.3	145.3	150.7
Kadapa	29.7	31.6	34.1	45.2	51.4	64.2	75.8	90.8	110.3	115.2
Krishna	51.7	57.2	65.2	71.2	85.7	95.8	101.7	108.3	110.8	120.8
Kurnool	33.9	39.9	46.8	53.3	68.7	77.9	85.6	98.7	102.4	120.2
Nellore	43	53.4	61.2	72.2	85.9	97.2	101.8	110.7	120.3	125.8
Prakasam	82.9	92	97.1	98.8	110.2	115.8	120.6	125.3	127.9	130.0
Srikakulam	147	155.4	217	341.5	355.4	361.8	372.5	385.3	410.2	425.3
Visakhapatnam	153.8	168.1	206.5	216.4	245.8	264.1	274.9	310.8	384.6	391.7
Vizianagaram	143.2	156.1	198.4	315.9	320.1	345.6	355.6	376.7	384.9	392.8
West Godavari	76.3	80.1	96	95.2	101.2	115.6	120.3	123.4	145.3	164.2
Andhra Pradesh	1612.5	1779	2142.3	2995.5	3254.8	3461.5	3601.5	3804.3	4331.1	4333.2

SOURCE: Integrated Sample Survey Reports, Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

NOTE: Reproduced from Integrated Sample Survey (ISS) reports published by the Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

Table 11 exhibits that the district and year wise buffalo Milk Production in the state of Andhra Pradesh. In the year 2010-11, 279.2 MT from Anantapur district, 116 MT from Chittoor district, 503.3 MT from East Godavari district, 803.8 MT from Guntur district, 244.9 MT from Kadapa district, 743.4 MT from Krishna district, 406.2 MT from Kurnool district, 377.2 MT from Nellore district, 804.8 MT from Prakasam district, 121.3 MT from Srikakulam district, 321.3 MT from Visakhapatnam district, 168.2 MT from Vizianagaram district, 573.4 MT from West Godavari district out of 5463 MT. It was increased to 9947.8 MT, 695.4 MT from Anantapur district, 282.8 MT from Chittoor district, 925.6 MT from East Godavari district, 1315.2 MT from Guntur district, 425.7 MT from Kadapa district, 1298.9 MT from Krishna district, 902.3 MT from Kurnool district, 745.6 MT from Nellore district, 1298.7 MT from Prakasam district, 255.6 MT from Srikakulam district, 485.7 MT from Visakhapatnam district, 325.6 MT from Vizianagaram district, 990.7 MT from West Godavari district during the year 2019-20.

Table 11 District and Year wise buffalo Milk Production in the state of Andhra Pradesh

Name of the Districts	Buffalo Milk Production ('000 MT)									
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
1. Anantapur	279.2	305.6	394.8	399.2	402.5	452.3	602.3	615.8	652.3	695.4
2. Chittoor	116	123.9	180.3	198.4	203.5	215.6	227.8	234.8	268.9	282.8
3. East Godavari	503.3	570.7	596.2	748.1	798.5	842.7	885.9	904.8	915.8	925.6
4. Guntur	803.8	865.7	861.8	1141.3	1158.9	1196.3	1285.3	1297.8	1302.8	1315.2
5. Kadapa	244.9	247.6	268.1	351.4	364.5	385.9	392.9	402.4	415.4	425.7
6. Krishna	743.4	852.1	912.4	1140.2	1155.2	1186.4	1198.2	1205.8	1265.8	1298.9
7. Kurnool	406.2	406.7	570.6	704.4	789.5	805.6	845.6	855.5	894.6	902.3
8. Nellore	377.2	407.6	484.3	587.4	609.5	611.6	685.8	697.9	702.8	745.6
9. Prakasam	804.8	864.6	918.2	1156.4	1168.5	1196.3	1236.3	1245.3	1275.4	1298.7
10. Srikakulam	121.3	137.7	112.8	169.5	185.4	202.3	215.6	222.3	234.7	255.6
11. Visakhapatnam	321.3	335.6	310.7	388.7	397.4	410.2	416.8	425.8	450.1	485.7
12. Vizianagaram	168.2	183.9	164.7	206.6	255.6	285.4	304.7	309.8	315.6	325.6
13. West Godavari	573.4	622.1	693.2	833.9	895.4	915.6	925.6	945.8	975.2	990.7
Andhra Pradesh	5463	5923.8	6468.1	8025.2	8380.7	8706.4	9222.1	9363.7	9669.3	9947.8

SOURCE: Integrated Sample Survey Reports, Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

NOTE: Reproduced from Integrated Sample Survey (ISS) reports published by the Directorate of Animal Husbandry, Govt. of Andhra Pradesh.

CONCLUSION

It is concluding that the India's dairy sector is unorganized and so, its future rests on supporting small dairy farmers. Advent of the latest technology and digitalisation have been slow in the sector, resulting in lower productivity and wastage. However, the scenario is changing with start-ups entering the space and bridging gaps in cattle management and supply chain. The future looks bright for the Indian dairy sector, as digitalisation is expected to usher in a new phase of growth.

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